/140 cont./

301 Earrings of Molentza chain; necklaces of glass beads. Rings on arms, wrists, and legs as among the men.

[756] The "Bushman doctor" wears special ornaments that other people are not permitted to wear. Unfortunately, I was not able to obtain any of these ornaments.

[882] Girls, it is said, do not start wearing ornaments until after their first menses.

[796] All the ornaments are worn for dances and ceremonies. The headdress of the women in Photograph 20 is worn only on special festive occasions.

302 [756] [301] The "doctor" has his head shaved smooth. I did not notice a special hairdress. The men frequently stick individual loose ostrich feathers in the hair, while the women like to braid brass or iron beads into the hair. In addition, the women use a kind of pomade made of various pulverized plant parts which are combined with fat from antelope skin.

Men sometimes cut their head-hair with a knife or a piece of glass.

There is no differentiation in hair style between girls and married women.

[386] The hair is frequently dyed with a mixture of fat and red clay. I am uncertain, however, whether or not this is a means of making the hair fall out in places. On the other hand, in that case there would probably have to be another ingredient /141/ in this mixture that I was unable to discover.

In case a beard is present, which does not occur often, it is neither cut nor removed in any other way.

[142] Pubic hair is sparse and is sometimes shaved off (with a piece of glass). It is said that women have no pubic hair at all.

E. Artificial Deformities

A kind of cosmetic of a reddish-brown color is used by the women.

It consists of a mixture of fat and red clay (see Section D above) and is manufactured by the women themselves.

[535] This cosmetic is regarded solely as a means of beautification and is used especially at festivals (dances).

/152 cont./

415 Mortars and pestles, as well as spoons of wood, are made (see Photo. 18).

[287] Painting and bark working are unknown.

171 The preparation of hides is the same as that practiced by the
281 Hottentot, Herero, Bergdamara, and Betschuana. Hence, I shall dispense with a description of the process.

The women's cosmetic described above is used to dye cloth-
281 ing made of hides. The dye is rubbed on with the ball of the
386 hand and is comparatively waterproof.

To be sure, it is questionable whether this process may be called "dyeing." The hides are already red from the tanning process, and the cosmetic scarcely changes the color. Perhaps it is better regarded as impregnation or greasing.

386 /153/ The colored stones that are pulverized and mixed with
438 fat to make the cosmetic are dug up near Kaitsaub (45 kilometers south of Gobabis) by the Hai//um Bushmen residing there, and they constitute an article of trade. [Fig. 12 appears here.]

283 The beautiful and durable cordage of the Auin is made of the fiber of a wild agave. It looks so neat and clean that one might suspect its origin to have been in a European rope factory rather than in a Bushman settlement.

The cords are made in various strengths and are used for all kinds of purposes, mainly for the game snares.

Their manufacture is very simple and proceeds very rapidly.

The leaf is softened by tapping with a wooden stick, and it is then placed on a firm base. One hand holds a pointed stick or a blunt knife firmly on the leaf, while the other hand draws the leaf against the vertically held knife and toward the body. After this has been repeated several times, the strong fibers remain and are then rolled together into cords of the thickness and length desired.

Industrial use of Bushman cordage does not seem impossible to me.

412 As a drill, the lance point or an iron knife is used, frequently red-hot.

325 Only pieces of iron found accidentally are worked. The extraction of iron from ore is unknown.

Charcoal made from the giraffe acacia is the preferred fuel
[372] for ironworking.

[Text continues on page 43]

!KONG

[30 cont.]

881 old people are seated. The young man may not eat any of the meat; he may only drink the soup, which is also rubbed on him. From now on he is regarded as an adult, a marriageable man; 882 his parents ask him whether he wants to be married. The boy 584 commonly replies: "I am still weak and do not know whether I can take good care of her." Then the parents allow him to wait until he himself wants to marry. Von Zastrow and Vedder (p. 415) report the following concerning the boys' initiation:

[31] "On this occasion the boys are told how they must 881 conduct themselves when they go out to seek a wife, and how they [867] must behave towards a mother-in-law. To sit down by an evening [584] fire next to an adult girl is tantamount to a marriage proposal, even if not a word is spoken. Under no circumstances may one [606] look at the mother-in-law. They also practice animal dances in the bush, the kind that are performed by the men later at joyous celebrations, and also in times of distress. Finally, the young [304] Bushman receives the tribal marking, a number of skin incisions on the cheek below the temple. Each tribe has a certain number of skin incisions. In order to make them stand out clearly even [386] after healing, pulverized charcoal is put into the incisions. As a result, the tribal marking later looks like a black streak on the yellow skin.

224 "There is nothing against applying another mark on the 304 future huntsman during this celebration, namely, the hunting 881 inoculation. This must be done by a man who has special powers and knowledge at his disposal. In order to sharpen the future hunter's eye for game generally and certain game in particular, it is necessary to make a deep incision between the eyes over the root of the nose, into which the practiced hand of the surgeon sprinkles a powder of dried and pulverized parts of all kinds of game.

"The inoculation may later be repeated several times if the hunter has no luck in hunting.

881 "A person who has received the tribal marking is now re- 884 garded as a Bush 'man'; he can make his own bow and arrows, like those of the old people, and go hunting with them. Also, the way is now open for him to found a family."

582 It practically never happens that a Bushman remains

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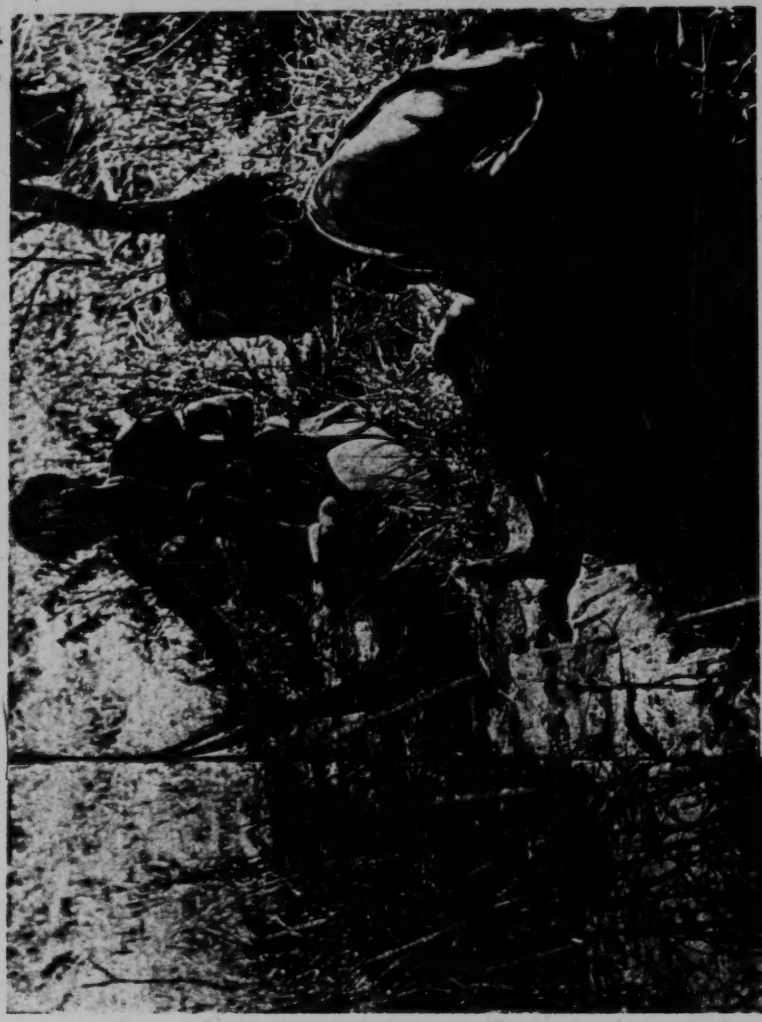

Most roots are dug up for food, but the ones held out, above, are valued for their bark. When it is powdered and rubbed on, it turns the skin red.

[p. 13]

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222 where the water bearing root Fockea monroi is available the Bushmen may extend their stay in the nutting groves by eating the juicy pulp of this root. If they are fortunate, this water source may tide them over to the next shower, part of which will accumulate in the hollows of trees.

13 The first rainfall, however brief, appears to have the general effect of triggering reproduction in animals, and initiating the growth phase in plants. Among the first of the summer foods to appear are the leafy greens Dipcadi glaucum and Talinum crispatulatum.

132 There is no well-defined boundary between the first rains of October and the main rains. J. Marshall mentions that during his periods of field work a gap occurred between the first and the main rains. In 1963 and 1964, however, the showers gradually increased in intensity and frequency from [433] October through December. The date of onset and the intensity of rainfall varies greatly from year to year and a delay of even a few weeks in the onset of rain can cause considerable hardship amongst the Bushmen. Furthermore, an initial rain followed by weeks of dry weather is a mixed blessing, for it brings the plants prematurely into leaf and they become scorched and damaged by the subsequent sunshine.

In 1963, the first rain fell on 8 October. In 1964, it did not fall until the 11 November and one noticed that the

132
433 physical condition of the Bushmen was visibly poorer in November 1964 by comparison with November 1963.

2. Main rains

132 The Bushmen say that a series of intense downpours
361 (measuring 2-3 inches) heralds the beginning of the main
[821] rains and ushers in their season of abundance. Such a fall occurred in 1963 at the end of November. The immediate effect of these downpours is to produce standing water in the small molapos that lie in the interstices of the dunes. When these seasonal waters become established, virtually the entire Bushman population moves out to live at them. Thus from December through March the permanent waterholes are largely deserted.

312 With the coming of the main rains, the summer foods
433 begin to ripen. These foods appear around the summer water
222 sources and they appear also around the permanent waterholes. It is significant, that, although foods become available at the permanent waterholes, the Bushmen tend to avoid these foods. They prefer to eat the foods that are around the summer waters. This illustrates one way that the Bushmen take maximum advantage of the more distant foods. They defer exploitation of the foods around the permanent waterhole until the winter when the alternative water sources have dried out.

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•312
361 The distribution of camps during the summer follows two phases. In the early phase when water is standing in a dozen or more localities camps are found at most waters. This is the time of maximum freedom of movement because ponds fill up in the usually waterless belts and make it possible for people to visit relatives 35-70 miles away.

The distribution of camps in December 1963 is illustrated in Map 17, p.157.

The second phase of summer life begins as these smaller waters dry up in February and March. Then most of the Bushmen converge on the large summer waters such as !Gauŝa Pan (not to be confused with /Gauŝa Pan in the Nyae Nyae area).

!Gauŝa Pan in its peak season (Jan-March in 1964) was a pond 400 feet long and 125 feet across, located in a local [162] drainage area between two dunes. In addition to a resident [648] population of 40 Bushmen (augmented by dozens of temporary visitors) the pan supported four Bantu cattle posts with [136] about 500 head of cattle. The pan was a watering place for kudu and wildebeeste and had resident flocks of red-billed teal, white-bellied stork and hammerkops. Within a 3 mile radius of the pan there were remains of at least ten abandoned Bushmen camps that had been occupied in previous years.

[162] Besides !Gauŝa there were four other big pans in the Dobe area, each of which supported large Bushmen camps (of

[TEXT CONTINUED ON PAGE 158]

221
312 30 or more people) and Bantu cattle posts. These were located
361 at Characharaha, Mahito, !gun/isa and /wihabe. Map 18 illus-
[162] trates the distribution of population during the late summer
(March 1964). p. 159.

221 Life at the summer pans is, by Bushman standards, luxur-
137 ious because all of the major and minor fruits, berries,
433
222 melons and leafy greens become available. There is a succes-
sion of ripening of the major foods throughout the summer
months. The first to ripen are the leafy greens (Dipcadi
and Talinum), followed by the sour plums (Ximenia caffra and
X. americana), then the melons (Citrullus lanatus and C.
naudinianus), and the Grewia berries (Grewia flava comes
first followed by six other species). By the time the plums
have become scarce the melons are ready for eating. As the
melons become worked out the Grewia berries ripen. Each of
six species of Grewia comes into ripeness at a different
time, so that every two weeks throughout the middle of
summer another species of Grewia became ready for eating.
Throughout the early part of the summer the mongongo nuts
are available but these are the nuts from the previous year's
fall. It is not until April that the current year's fall of
nuts occurs. And then a new cycle of working out from the
camp occurs. This illustrates again the selective gathering
habits of the !Kung Bushmen.

000 meat no doubt lessens the men's incentive for hunting.

221 3. Autumn - which fell (in 1964) during April is the period
• 312 when these large summer waters are drying up. One by one the
361 big pans turn into muddy pools and the Bushmen abandon them. Some of the people join the camps established at the remaining summer waters while others fall back to their permanent waterholes in the main molapos.

!Gauša was the last of the summer waters to go dry. It was finally abandoned by May 1, 1964. By this date all the Bushmen had returned to the permanent waters and this marks the beginning of the winter subsistence cycle.

As mentioned previously the present study was made during a drought. There are indications in the literature that summer waters do not always dry out as early as May 1. The Bushmen themselves spoke of summer water persisting in previous years into the period of frost which does not come until June or July. It is also probable that the presence of Bantu cattle contributed to the premature drying out of the summer waters. However, these hypotheses cannot be tested except by further field work.

4. Early Winter

221 The winter season is not coterminous with the period of
312 food scarcity. This scarce period does not begin until mid-
433 winter and continues until the first rains. The first half

221 of winter from May to mid-July is a period of relative abun-
• 312
433 dance. This is due to the fact that the permanent waters
[361] have not been occupied during the summer months, and there is abundant food in their vicinity when the Bushmen return to
[824] them in May. Subsistence has a double base, including both the tail-end of the summer foods such as the Grewia berries, and the first series of winter roots and bulbs. Mongongo nuts are also locally available. The distribution of the Bushmen population during the winter of 1964 is shown in Map 19, p. 165.

221 The root foods are generally associated with the winter
824 subsistence. This is curious because as perennials the bulbs may be dug out at any time of the year. But the Bushmen do not concentrate on root foods during the summer months: they pass them over in favor of the foods of shorter duration, the fruits and melons. They state that they do not like the flavor of the root foods during the winter.

In May and June these root plants are exploited and the pressure on them increases through the winter as the nuts become locally exhausted. The major roots are Eulophia spp., Vigna dinteri, Walleria muricata, Coccinia spp., Coccinia rehmannii and Ceropegia spp. - nine species in all. These have edible bulbs or storage organs which range in size from one to three inches in diameter.

[TEXT CONTINUED ON PAGE 166]

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222 well into September. On the other hand, at /ai/ai, where 109
184 Bushmen were living, the local mongongo nuts were exhausted at the beginning of July.

Since each territory was known for a different selection of winter foods, the transition took a different form at each waterhole. At Dobe, the mongongo nuts were replaced as the staple of the diet by Baobab fruits (Adansonia) and vegetable ivory palm hearts (Hyphaene). At Bate the people shifted from mongongo nuts to Sclerocarya caffra nuts. At !angwa, the people concentrated on collecting Acacia spp. gums.

221 In general the diet of the Bushmen becomes much more
824 eclectic during the latter half of the winter. It was during
146 this season that the Bushmen took advantage of a wide selection of edible species. Instead of eating mongongo nuts with a few other species as "side dishes", the people had to diversify their diet in order to live well. During August and September no less than 25 species of roots, bulbs and edible gums formed the basis of the diet.

222 There was an alternative strategy to eating less desirable
• 312 foods. If a family was prepared to make the effort required to reach the nutting groves, they would fill their water containers (ostrich egg shells and the stomachs of antelope) and walk to the nuts. They would collect and eat there until

222 their water was exhausted. Water could only be carried out
312 in sufficient quantities to support a family for two or three nights, so that at noon of the third or fourth day, a family was forced to return home.

312 The ability of a group to live away from a waterhole is strictly limited by its capacity for hauling water. The ostrich egg shell has an average capacity of 36 ounces (U.S.).[1] The contents of two eggs (72 ounces or 2-1/4 quarts U.S.) supplies the minimum daily fluid requirements of one adult. Bushmen informants consistently spoke of two eggs-ful as their minimum daily ration. When well-water was available, the Bushmen were observed to drink more than 72 ounces per day. Irven DeVore made a four-day study of the water intake of a group of 15 people in November, 1964. During this period he provided (from water drums) all the water that was drunk by a party of 15, including seven adults and eight children.

His observations are set out below:

1. Total water given out during a 72 hour period; 2,812 oz.
2. Average per 24 hour period; 937 oz.

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[134] [1] The Kalahari ostrich egg shell is smaller than that of other areas. The mean capacity of four eggs from the Dobe area is 35.8 ounces (U.S.). (The range of capacities is 33.5, 35. 35.5, and 39.5 ounces.) This compares with an egg from the Cape Province with a capacity of 42 ounces, and an egg from Kenya with a capacity of 46 ounces.

• 312 3. Average quantity of water provided to each adult per 24 hour period; 85 oz.

4. Average quantity of water provided to each child per 24 hour period; 43 oz.

Since the amount of water loss through sweat varies directly with the air temperature, an individual would require more than two eggs-full of water during the summer when the mean daily maximum temperature is 100°F. During the winter, when the mean daily maximum is 85°F, two eggs-full appear to be sufficient.

Similarly, the amount of water loss through sweat varies directly with the intensity of activity, so that an individual would require more water after a day of hard hiking in the sun than he would after a day of comparative inactivity in the shade of the nut forests.

For the present case (winter nut collecting trips) the two-egg figures will be taken as an average.

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For every day of residence away from the permanent water, an individual must carry with him, 72 ounces of water. Therefore a person on a three day collecting trip must carry out four eggshells of water: one for the afternoon of the first day, two for the second day and one for the morning of the third day. Children under 10 years of age can manage on one egg shell of water per full day. Therefore, if a man and wife

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222 with three young children go to the nuts they must carry a minimum of 4+4+2+2+2 = 14 ostrich egg shells filled with water, four for each adult and two for each child. However, most women own only about six shells. By borrowing shells from other camp members they can bring the total up to the number required for a three day trip.

[426]

The antelope stomach sacs offer an increase in water-carrying capacity. A fresh sac will hold up to one gallon (U.S.), i.e. 128 ounces of water, which is the equivalent of 3-1/2 egg shells. Therefore, if a family of five owns two stomach sacs containing 256 ounces of water, this will provide them with one day's supply of water. The 14 egg shells hold three day's supply of water, so that, with two stomach sacs and 14 shells, the family of five can stay an extra day (three nights instead of two) away from the permanent waterhole.

Four days is the upper limit on the time that Bushmen can spend away from a waterhole without a supplement of water from plant sources. There are three reasons for setting the upper limit at four days. First, there is a limit to the number of containers available. Stomach sacs are very fragile and have a short useful life. As they rip they are sewn and this sewing makes their capacity smaller and smaller, so that after six months or so they are discarded. Ostrich egg shells, on the other hand, are much more durable

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[426] and may stay in constant use for years. It is curious therefore that each family possesses less than 10 shells and must borrow shells in order to make these hiking trips to the nuts. The limited number of containers is probably the reason why members of a camp go out to the nuts in shifts. When one family returns, the camp's ostrich egg shells are pooled, and then another family may go out.

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222 A second limitation is the weight of water that can be carried. The 756 ounces of water required for four days at the nut forest weigh 47 lbs. Each empty ostrich egg shell weighs eight ounces; so that the 14 shells themselves weigh
[855] an additional seven lbs. Furthermore it is necessary for the parents to carry the younger children on their shoulders. So, in effect, the parents must walk out to the nut forests fully loaded with water and children and also return fully loaded with nuts and children. On the return trip the weight of the water is replaced by an equivalent weight of collected nuts.

The third limitation is set by the volume that the ostrich egg shells occupy in the carrying space of the kaross. The volume occupied by 14 ostrich egg shells is roughly equivalent to the volume occupied by 14 quart-sized milk bottles. When the time comes for the trip home the adults must pack into each kaross 20 lbs. of nuts, as well as the empty ostrich egg

312 shells; this makes for a very bulky and unwieldy parcel. The
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222 stomach sacs, by contrast to the egg shells, have the distinct advantage of being weightless and occupying no space on the return trip, since when they are empty they dry and shrivel up.

221 The reader can now appreciate the complex logistics of
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312 Bushman subsistence activities during the late winter dry season. In view of the difficulty of collecting mongongo nuts during this season, it is not surprising that the people turn to an eclectic diet of roots, bulbs, and gums that are still available in the vicinity of permanent water.

222 Several variations in tactics were observed among the
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855 Dobe area Bushmen. One such variation was to leave the older
312 children behind in the care of relatives while the parents
482 made the long trips to the nut forests. By leaving behind two children at the main camp, the parents could effect savings of 30% in the weight of water that had to be carried out on a four day trip.

222 Another variation observed was the two-day-one-night
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312 overnight hike. Such a trip lasted only 36 hours and required
[482] only three ostrich egg shells of water per adult. By using this tactic, groups of ten or more people could make a rapid lightly loaded trip to the nut forests and return the following day heavily loaded with nuts. This was a difficult operation

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312 because it entailed two consecutive days of hardhiking on
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484 short water rations. The object of such a trip was to get to the nuts and back again as quickly as possible, before the physiological deficit of water was allowed to reduce efficiency.

221 The general object of the winter nutting trips was to
222 remain at the nut forests just long enough to eat a really
262 substantial quantity of nuts (about 400 nuts per adult). This marathon meal starts the moment that the Bushmen arrive at the nut camps and continues throughout their stay. It is interrupted for short periods when the Bushmen go out to col-
[539] lect nuts in the vicinity of their temporary camp. There is a Bushman saying that aptly applies to this situation: "It is better to carry food home in your stomach than on your back."

[224] Hunting rarely occurs at these overnight camps. The efforts of men and women alike are directed to eating as many nuts as possible in a short time.

[312] The most important variation in the late winter and spring subsistence tactics centers on the use of Fockea monroi as a source of water. This will be discussed below.

132 6. Early Spring

August is the last month of winter. The last of the freezing nights occurs at the first of the month and these are followed by warmer nights in the 40's and 50's and daily

132 highs in the 90's. The warmer weather heralds the onset of
312 spring which is the most difficult season of the year. Most
137 of the waterholes have no mongongo nuts within a ten mile
222 radius. The alternative foods, roots and bulbs, are being collected daily by some of the people, while others are making the long overnight journeys to the nut forests.

221 Since territories vary in the abundance of early spring
574 foods there was a noticeable tendency for families to visit
628 other camps. For instance in September, Bate still had a good supply of Sclerocarya caffra nuts; and several families from Dobe, Mahopa, and !angwa converged upon Bate to eat these nuts. Similarly !ubi had a supply of Baobab fruits (Adansonia digititata) and other families made extended visits to relatives there. The maintenance of close ties between camps made possible a more equitable distribution of foodstuffs, so that, if there was scarcity at one camp, and food at another, the members of the first camp would not go hungry. This is one of the highly adaptive features of the fluidity of !Kung group structure.

[563] Some families fall back on the Herero villages at this
[431] time of year to beg for milk. This occurs especially among those people who have a sister or cousin married to a Bantu man. Both the Bushman and Herero codes of good manners demand that visiting in-laws be fed (L. Marshall 1961).

251 were roasted in the coals of the fire and then pounded to
252 the consistency of coarse meal in the wooden mortar. This
262 roasted hide had the taste and texture of crisp crackling and was delicious when pounded and mixed with the flesh of roots of the genera Coccinia, Walleria and Eulophia. These stores of dried hide and meat did not serve as a staple surplus so much as an emergency delicacy to brighten the diet when a day's hunting had been unsuccessful.

221 The major food strategy during the hot dry spring was
222 the 7-14 day trip to the waterless country where mongongo nuts
312 were still plentiful. At these camps the only source of
361 water was the juice from the roots of Fockea monroi. Fockea
824 has an uneven distribution in the Dobe area. The Bushmen must camp in a nut forest that is in close proximity to patches of Fockea. The maximum period that a group was observed to live on Fockea roots was two weeks. The limitation is set by the density of Fockea plants in an area, and the amount of fluid that each plant holds. Life at the Fockea patches is difficult because people have to work hard to obtain water as well as food. Each Fockea root storage organ contains 8-16 ounces of recoverable moisture. Thus a daily ration of 72 ounces of water can be obtained by digging out 5-10 Fockea roots.

312 But the dilemma of living on Fockea lies in the fact that
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16: Lee E-5 (1963-1965) 1966 FX10 Bushmen FX10
!Kung

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222 a great deal of energy must be expended in digging out these roots, and the concomitant of this expenditure of energy is a much greater fluid loss through sweating.

It was mentioned earlier that the body's daily water loss is in part a function of the intensity of activity. For instance, an individual who is resting in the shade will lose half the water that is lost by another individual who is walking in the sun.[1] When standing water is available, the amount of energy expended in obtaining water is small. An individual walks a few hundred yards from his camp to the waterhole, drinks his fill there, then fills his water containers and walks back to the shade of his camp. On the other hand, an individual who is living on Fockea roots must walk several miles per day in the sun and must dig out a number of large roots that are buried 12-18 inches deep in the hard soil of the molapos. Therefore an individual who drinks Fockea juice must first replace the considerable quantity of water that is lost through the effort of searching and digging the Fockea roots; this is in addition to the water that is lost in the course of normal daily activities such as hunting, food gathering and resting.

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[1] Adolph and associates (1947) present detailed analyses of this and other factors in sweat production.

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222 The net effect of this effort is that an individual must drink much more than the minimum daily requirement of 72 ounces of water. In fact, men who were living on Fockea roots, were observed to dig out between 15 and 20 of the roots per day. The quantity of water provided by these roots is estimated at 150-300 ounces, part of which went to provide water for the children of the camp.

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312 A description of one Fockea trip, in which the author participated, will serve to illustrate some of the difficulties of living away from standing water.

[123] This trip began on 6 November and ended on 16 November, 1964. The group consisted of 12 Bushmen (plus the author); there were three men, four women, and five children. One of the young women gave birth during her stay so the returning group consisted of 13 Bushmen.

November 6 - This group (minus one of the men who came out the following day) set out from the Dobe waterhole at 10:00 [103] a.m. They spent the day walking to a nut forest named !wi/wama which was situated eleven miles west of Dobe. The original plan was to remain there for five days.

[481] The pace was leisurely to suit the three older children [855] (ages 12, 8, 6 respectively) who went on foot and the young [843] woman who was in the terminal month of her pregnancy. On the way we stopped at intervals to eat seven different species of

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312 food plants and to rest in the shade. Towards evening we reached a patch of Fockea roots and spent an hour digging and eating them. Six roots were divided among our group of 12 people. At seven p.m. we made camp in the mongongo nut forests at !wi/wama. Within minutes of our arrival the four women had collected and were cracking mongongo nuts.

Before leaving Dobe, the Bushmen had filled 15 containers with water:

1 kudu stomach sac	4 quarts
2 enamel buckets	4 quarts
12 ostrich egg shells	13-1/2 quarts
Total water carried:	21-1/2 quarts (= c. 700 oz. or water)

On the outward journey, the 12 of us drank four of the ostrich egg shells which had been filled at the Dobe well, plus an estimated two quarts of water from Fockea roots. During the evening, no one drank water until just before bedtime when a further three quarts of water were divided out. Therefore, of the estimated total of 700 ounces of well water, 224 ounces (30%) had been consumed on the first day's hike. It is not known how long the remainder lasted because the author left the camp at the end of the second day.

November 7 - The group woke up at 5:40 a.m. The women were not satisfied with the location of the camp so we packed up and hiked west for another half mile to make camp at a new

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484 location closer to the nuts. By 7:00 a.m. this camp had been
• 312 deserted. The women and their children had gone to collect
[462] nuts and the men had set out to find Fockea roots and to hunt
[224] along the way. The men carried no water with them on the hunt. The author accompanied the men.

We walked south for several miles looking for fresh animal tracks and for patches of Fockea plants. We passed through two molapos where the Fockea plants were likely to exist, but to our disappointment we found none. It was 10:00 a.m. before we dug out the first Fockea of the day.
[132] By this time the morning coolness had disappeared and we had to walk and dig in the sun with shade temperatures about
312 100°F. The first Fockea worth digging were found 4-1/2 miles
824 south of our camp at !wi/wama. The roots were the size of a football and weighed about three pounds.

The flesh of Fockea is white and juicy with a spongy granular texture. The juice is milky in color and slightly astringent so that it smarts when accidentally rubbed into small cuts on the hands. There are two methods of extracting the moisture from the root. First, one cuts open the root with a knife and chops off chunks of the flesh inside. This may be eaten directly like watermelon. The disadvantage of this method is that one must swallow about three pounds of roughage in order to extract one pint of moisture; in other

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824 words, 15 lbs. of roughage per day for the minimum water requirment. This is the most efficient means of processing water from Fockea roots because the digestive system can convert all the moisture that is in the Fockea flesh.

However, the Bushmen say (and I can corroborate this) that a man cannot swallow 15 pounds of pulp per day. The stomach becomes full long before one's thirst is quenched. It is probable also that such a great quantity of roughage would put an intolerable burden on the human digestive system, even of people whose digestive systems are accustomed to processing quantities of fibrous roughage.

The more common way of extracting moisture from the root is to squeeze the juice out by hand. The juice may be squeezed directly into the mouth, or squeezed into a cup and then drunk. This is a less efficient way of extracting moisture because much of the juice remains in the fibers after squeezing. Also some of the juice runs down the arms. It does offer a distinct psychological advantage, however, because one is able to drink the juice and thus satisfy the swallowing reflex which is connected with the neurophysiological sensation of thirst (Ladell 1958). Eating the flesh of Fockea does not satisfy this sensation.

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224 The men continued to eat and drink Fockea from 10:00 a.m. to 12:20 p.m. Then we started to hunt in a northerly direction.
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[824]

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[222] No game were seen except for a solitary female ostrich. We tracked her to her nest and collected her clutch of nine eggs. Each of the eggs was pounded in the sand to separate the amnion from the inside of the shell. This apparently kills the embryo inside the egg. These nine eggs were divided among the three of us. We then dug out four large Fockea roots intact, and we returned to the camp at 2:30 p.m. after a hike of nine miles.

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• 312 The women of the camp had spent the early part of the morning collecting nuts and Fockea and the rest of the day sitting in the shade cracking nuts and squeezing the Fockea juice. From 2:30 to 4:30 p.m. no one drank any of the water that had been brought the previous day.

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312 At 4:30 p.m. the third man of the camp arrived from Dobe. He brought with him one gallon of water in an enamel milk pail and portions of a dead kudu that he had scavenged from a carnivore kill on the way.

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312 By this time I was experiencing symptoms of heat distress, (fever, lassitude, inability to swallow) and decided to return to Dobe, because my continued presence would become a burden on the camp residents, none of whom, incidentally, showed any signs of heat discomfort.

One of the men, seeing my condition, offered to accompany me back to Dobe with his family. We left at sunset and walked

484 until 8:00 p.m. Before making camp we ate wild oranges along
123 the way (Strychnos [illegible]inosa) but these did not contain much
312 moisture. We camped at a point halfway between !wi/wama and Dobe and there shared out the last of the family's drinking water, which amounted to one quart for four adults and three children, that is c. 4-1/2 oz. for each of us.

484 November 8 - The camp awoke at 4:50 a.m. By 5:20 we had
123 packed and were under way, arriving home without incident at 7:30 a.m.

484 November 8-16 - This ended the author's participation in
312 the Fockea trip. Six members of the original group remained
361 at !wi/wama eating nuts and drinking the juice of Fockea. On the eleventh of November there was a heavy fall of rain at !wi/wama which created a temporary pool of water near their camp. This enabled them to extend their stay beyond the original plan of five days.

484 The same week that the rain fell, the pregnant woman of
361 the camp gave birth to a baby boy. The group remained at the
844 nut camp until the mother was strong enough to walk. Then they broke camp and returned to Dobe on November 16. Both mother and child appeared to be in fine condition.

132 The rain of November 11 was the first substantial fall
221 of the 1964-65 rainy season and initiated the subsistence activities associated with the late spring (see above). Thus

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221 this account of the seasonal round has come full circle to the starting point.

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433 In summary, there are, in effect, only three basic sets of subsistence conditions for the Bushmen:

1. Water everywhere - Food everywhere

2. Water limited - Food abundant

3. Water limited - Food scarce.

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433 When the first set of conditions prevail during the rains of November through March, Bushman life is sweet. The camps
[628] can live near the most concentrated food sources within their
[674] territory, or share in the food supply of neighboring camps,
[602] or easily undertake the long trips to visit relatives at distant waterholes.

When the second set of conditions prevail, from April through July, freedom of movement is more restricted but food is still abundant enough to make life comfortable.

When the third set of conditions prevail, from August through October, the Bushmen must resort to increasingly arduous tactics in order to maintain a good diet, or, alternatively they must content themselves with foods of less desirability in terms of abundance, ease of collecting and nutritive value.

It is during the three lean months of the year that the Bushmen life approaches the precarious conditions that have

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come to be associated with the hunting and gathering way of life. However one should not lose sight of the fact that for nine or more months of each year the Bushmen can easily fulfill their food requirements without resorting to the more difficult (and, to our eyes, more dramatic) subsistence tactics.

121 It is suggested that the delayed assumption of social
433 maturity by the young people and the support of the non-pro-
883 ductive elderly people are institutions which are possible
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182 only in a society with a relatively secure subsistence base.

433 Water, Food, and Nomadism -- The special subsistence problems
• 312 faced by the Dobe area Bushmen concern the scarcity of water.
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361 All of the eight natural permanent waterholes are situated in or near the beds of the main molapos. During the summer months, when temporary pools develop at a distance from permanent water, the Bushmen can move out to live at them. Except for a few weeks each year, the Bushmen spend their entire lives camped within an hour's walk of standing water. Only at the end of the dry season do some of the younger people undertake the long trips to the dry forests where they live by digging out the water-bearing roots. Since it is the custom of the Bushmen to return each evening to their main camps, it follows that areas within a single day's walk of standing water will be intensively utilized. Areas that lie beyond this radius will be rarely utilized even though they may be rich in food. The fact that the Bushmen can live well for most of the year within a six-mile radius of permanent water indicates that they do not lead a nomadic way of life. Each summer they move up-country to the seasonal waters and each winter they fall back on their permanent waterholes. In contrast to some Australian aboriginal groups, whose annual round consists of walking a circuit of many waterholes, the Dobe area Bushmen have a

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221 transhumant annual round, in which they alternate between their
361 rainy season range and their dry season range.

484 The Dobe area !Kung do not undertake long marches of
574 30-70 miles for the purpose of getting food. This task can be
628 readily fulfilled within a day's walk of their territorial water sources. When such long marches occur, they are invariably for the purposes of visiting, trading, and marital exchanges with relatives at distant camps. As such, these trips should not be confused with the normal routines of subsistence.

311 Range Size and Population Density -- By plotting the movements
433 of the various camps in their annual subsistence cycle, the
162 observer can derive a rough estimate of the total land area that is required to support the population of 430 Bushmen. It would be much more difficult to estimate the area necessary to support a single camp, because of the considerable overlap of territories and the frequent visiting between camps. It will be more useful to treat the entire population as a unit. It is estimated that the 800 square miles that lie within a six-mile radius of major water sources are sufficient to support the population for most of the year. Beyond this radius lies a hinterland which is rarely penetrated; perhaps a further 200 square miles of this hinterland is utilized in the course of a single year. Thus the total annual range of the Dobe area Bushmen may be estimated at 1,000 square miles. This calculation sets the effective population

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a most desolate appearance. Verdure is entirely wanting, the numerous gullies are empty, and the low ranges of ironstone koppies which dot the plains seem to reflect the heat as from a mirror. The vegetation is composed very largely of drought-resisting thorn bushes, succulents, bulbous and tuberous plants. Grasses appear only in exceptionally wet years, while trees are usually absent, except along the dry river-courses and on the mountain slopes in the east, where the rainfall is highest. Till the early years of the nineteenth century the Great Karroo was regarded as a desert unfit for man or beast; since then well-sinking and donkey transport have bettered the conditions, and the region has gradually become occupied.

Fauna

The great variety of habitat provided by the country taken as a whole has naturally favoured the development of a varied and abundant fauna.[1] South Africa has long been renowned for the wealth of its larger forms of animal life, although with the advance of European settlement and colonization the numbers have been rapidly reduced, particularly of certain classes of big game. The native inhabitants had certainly done something to reduce the numbers and affect the distribution of the fauna, but a balance had been reached which still left the country richly stocked. The Cape was full of game when the first European settlers established themselves there 250 years ago, and in their gradual spread inland the white men found the same abundance of fine forms of animal life in each new tract of country that they entered. A few decades were enough to convert each newly-opened district from a hunter's paradise into a stock-farming country, and the increase of veld-burning carried the destruction into other zones of life. But over large parts of South Africa the face of the country itself has been little changed on the whole, and a good deal of the original fauna has survived, even on much of the enclosed land.

The mammalian fauna is, or rather was, characterized by the great abundance and variety of antelopes, the presence of such remarkable "living fossils" as the elephant, giraffe, rhinoceros, hippopotamus, and aardvark, as well as of the buffalo, zebra, and quagga, and the abundance of carnivora, large and small. During the eighteenth

[1] An excellent short account is given by Dr. E. L. Gill, "Descriptive Sketch of the Fauna of South Africa," *Official Year Book of the Union*, No. 9, pp. 31–41. Cf. also Passarge, op. cit., pp. 78–86.

2: Schapera E-4, 5 (no date) 1930
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Environment and Culture

The possibilities of exploitation this region offers to people lacking the highly-developed technical equipment of modern European civilization vary considerably. The ways in which the Bushmen and Hottentots utilize the natural resources of their surroundings will be discussed in some detail in later chapters. Here a rapid survey may be made of the factors conditioning the distribution and mode of life generally of the natives inhabiting the country.[1]

The most important consideration naturally is water. Animal and plant life are there in sufficient quantity to support human existence, provided a supply of water is near. Man in his primitive condition is dependent entirely on surface water for the satisfaction of his needs, for he has not the means now possessed by civilized man for getting at the water in the depths below. The amount of surface water therefore determines the density of population in any one area, and the water available in a given area, together with the density of the vegetation, determines the number and size of the settlements in that area.

The character of the country, moreover, limits at once the types of culture that can become indigenous there. South Africa even under modern conditions can only carry on agriculture in certain parts, and most of the country could never support a primitive population of pure agriculturists. It is only in the well-watered districts to the north and east and along the south coast that native agriculture has been developed to any extent. On the other hand, there is an abundant fauna and a sufficiency of vegetable life to afford good subsistence to men. The type of culture then that we would *a priori* expect to find here would be one based largely on hunting and collecting. This is exactly what we do find. The abundance of game formerly existing in South Africa makes it readily comprehensible that hunting at one time played a great role in all parts of the country, and therefore that hunting peoples were distributed all over its surface. All the native peoples of South Africa, whatever other means of subsistence they have, rely to some extent at least for food on the products of the chase and on the edible bulbs and roots of the veld.

A country, however, which can support great numbers of buck

[1] For special discussions of the South African environment in relation to man, cf. Passarge, op. cit., pp. 162–75; *idem*, "Die Grundlinien im ethnographischen Bilde der Kalahari-Region," *Z. Ges. Erdk. Berlin*, 1905, pp. 20–36, 68–88; (Mrs.) A. W. Hoernlé, "South-West Africa as a Primitive Culture Area," *S. Afr. Geog. J.*, vi (1923), pp. 14–28.

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and other grass and herb-eating animals will also support other species of these animals, provided that conditions such as the absence of the tsetse fly and other pests are favourable. Hence we also find pastoral tribes, who have come in from other regions bringing with them great herds of cattle and immense flocks of sheep and goats. One important point must, however, be noticed. Country which, under modern farming conditions, will only carry a small herd of cattle, sheep, and goats, used formerly to carry large herds of well-fed antelopes and zebras. The explanation is that each wild species is specially adapted to living on certain bushes or plants, and that many natural foodstuffs useless to farm stock were made use of by one species or another of wild game. It must also be remembered that the wild game was not restricted by farm boundaries; it was free to shift its ground according to the seasons and the supplies of food and water. For the same reasons a nomadic life was imposed on the native tribes keeping domestic animals, although nowadays with the extension of the European settlements the areas over which free movement is possible have become greatly restricted.

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Viewed in this light, the natural regions of South Africa which have been described above are seen to differ widely in their value for culture. Certain parts of the country, such as the Namib desert strip and the interior of Bushmanland, are largely uninhabitable. The rainfall in both is exceedingly slight, and there is practically no surface water all the year round. In parts of the Namib, however, the river-courses from the mountains of the South-West African plateau periodically carry water, which is dammed up in a few places by rocky outcrops in the river beds, and above all there is the */naras* melon, whose fruit is sufficiently succulent to provide a substitute for water. Agriculture is completely out of the question. The thin scattered population which the region can support is forced to lead a nomadic hunting life, although in the east, towards the borders of the plateau, the grass which flourishes during the rainy season occasionally permits of pastoralism.

The greater part of the Middle and Southern Kalahari lacks surface water during the dry season only. The water supply at other times is generally sufficient to permit of temporary settlements, although the porous sand covering of the surface absorbs all the rainfall, so that except in the pans and other waterholes the standing water rapidly disappears. The region is sparsely inhabited, and mostly by nomadic peoples. Agriculture is again impossible, save in a few tracts to the

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east, where the soil is more favourable, but the rainfall is too uncertain to enable grain to be grown with a reasonable prospect of success. The abundance of grass in many parts, especially during the rainy season, affords good pasture to cattle, but the region is above all an excellent hunting ground, and formerly at least it was extraordinarily rich in game. Hence its inhabitants are in the first place hunting peoples, and their life is conditioned by the movements of the game. At the beginning of the rainy season the animals wander out of the permanently-watered regions encircling the desert into its sandy plains, where water is found only in pans, pools, and waterholes. The hunters follow them. As the dry season sets in and the water in the pans begins to shrink, part of the game returns to the watered regions, part of it, however, continues to live in the plains on the *tsama* melons and other succulent plants—and the hunters do the same.

In the well-watered Northern Kalahari three great streams, the Okavango, Kwando, and Zambesi, overflow on to the flat land, in some parts continuously, in others periodically, and thus give rise to an extensive region of swamps. This marshy region is excellent hunting and fishing ground. Its population, more numerous and densely settled than in the rest of the Kalahari, is therefore primarily concerned with these two pursuits. The natives indeed are actually forced to resort in part to fishing, since for motives of security they live mainly on the small islands between the swamps and the rivers. The periodic rise of the rivers annually floods wide stretches of the country, resulting in displacements and wanderings of the game. Consequently, the natives also must roam, partly because their habitations are flooded out, partly because they must follow the animals. Both agriculture and pastoralism are also carried out in parts of the country. The cattle pasture in the sandveld away from the swamps, while the marshy region can only be used for the cultivation of crops, since for wide stretches it is infested by the tsetse.

The upland regions encircling the Kalahari basin on the south-east, south, and west, have for the most part a scanty rainfall. The permanent settlement of this belt during the dry season is therefore restricted to the scattered waterholes, which occur in river beds, on mountain slopes or in depressions on the hard soil. Waterless stretches from 40 to 100 miles in extent are no rarity, so that the settlements are frequently distributed far apart over the land. Here, as in other regions of South Africa, hunting must depend on the movements of

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the game. In the more arid parts the animals in the dry season concentrate in vast numbers about the rivers and waterholes and pans, to disperse widely as soon as the rains make life possible elsewhere. The same features of alternate concentration and dispersal can be observed in the life of the purely hunting tribes. The pastoral resources are on the whole excellent, there being no lack of grass or edible shrubs even during the dry season, and consequently cattle-keeping peoples are able to lead a favoured existence in these uplands. Agriculture is also practised to some extent, but is confined to the scattered alluvial tracts. As a means of subsistence it is rendered precarious by the frequent droughts which characterize the region. These often exercise a harmful effect on pastoralism as well, partly because of the ensuing lack of water, but mainly because the pasture is completely destroyed in many parts of the country. The plateaus of the Orange Free State, Cape Province, and Southern Bechuanaland are especially exposed to such catastrophes, but they are often enough marked in South-West Africa also, particularly in Great Namaqualand.

Further east and along the south coast the rainfall is high enough to place cultivation on a safe footing, while the country, where it is not covered with bush or forest, is composed of extensive grass flats which can be used as pasture land. Consequently, both agriculture and pastoralism are equally developed, the former being carried out on a far greater scale than in other parts of South Africa. Here, therefore, we find the most thickly settled zones, and the population is mainly sedentary, even although the pastoral tribes must still to some extent lead a nomadic life.

Migration Routes

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The geographical situation of South Africa has an obvious bearing upon the racial history of the country. Cut off by vast uninterrupted stretches of water from ready access on the west, south, and east, its most direct link with other regions is overland to the north. In the north-west the great forest regions of the Congo impose an effective barrier upon extensive human migrations, so that it is principally from the north-east that invading peoples have been able to enter the country.[1] The East African highlands are connected with the south by a favourable route passing between the escarpments in the east with their sharp descent to the fertile but fever-stricken coastlands,

[1] Cf. Passarge, *Z. Ges. Erdk. Berlin*, 1905, pp. 32–3; *idem*, *Südafrika*, pp. 163–7.

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mountains in the west of Great Namaqualand.[1] Most of the Bushmen, however, now live in flat country, where such natural shelters are denied them. Wherever they stay for more than a couple of days, crude bush huts are put up by the women. These are usually erected within walking distance of a waterhole, about an hour or two away. The people never live at the water itself, for fear of frightening away the game, which is most easily shot or trapped when coming to drink.

Among the Heikum, according to Fourie, "When it becomes necessary to desert an old camp and establish a new one the site for the latter is selected by the chief, who deposits his household and other effects on the place on which his own hut is to be erected. After the other members have done likewise he proceeds to light a new fire by means of firesticks. Brands from the fire of the old werft may not be used for this purpose. From the fire kindled by him each family then lights its own, after which the women may begin with the building of the huts."[2]

There seems to be as a rule no fixed form of settlement. All the families drinking at one waterhole may live in one group, or there may be several lots of huts scattered about in different directions. Among the Cape Bushmen, for example, one might find three or four huts standing together, or several huts dotted about within a radius of a few miles from the water, and the same appears to be true of the Naron.[3]

Among the Heikum, however, the camp is said to be laid out on a definite plan.[4] As a rule all the members of the band live in a common encampment or "werft" (*//gaus*). The huts of the married families are placed at a certain interval apart, and arranged in the form of an irregular circle. At or near the middle of the camp is situated a large tree, known as the */hais*. The hut of the chief (*gei-khoib*) is always placed in the east, facing, but at some distance away from, the others. The brother of the *gei-khoib* live immediately to his left on the south side of the *//gaus*, and beyond them are placed the other married families of the community. The right or north side of the *//gaus* is reserved entirely for visiting sisters of the *gei-khoib* and their families, while any of his married daughters who may be visiting him erects her hut directly opposite to his at the furthest extremity of the camp. "This is done on account of the parent-in-law taboo (*tao-sas*) which

[1] Trenk, "Buschleute der Namib," 166.
[2] D. F. Bleek, *The Mondé and his Friends*, p. viii; *idem*, *The Naron*, 4.
[3] Fourie, "Customs of the Hei-//om Bushmen," 50–2; *idem*, "Bushmen of S.W. Africa," 86.
[4] "Bushmen of S.W. Africa," 86.

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CHAPTER V

SOCIAL HABITS AND CUSTOMS

DAILY LIFE AND FOOD

Daily and Seasonal Routine

THE life of the Bushmen is one long struggle for food. For their 221
subsistence they rely entirely on the natural products of their environment: their animal food is obtained mainly by hunting, and occasionally fishing, while their vegetable food consists of edible plants, roots, and fruits growing wild in the veld. Save where they [177]
have been very considerably influenced by other peoples, they neither practise agriculture nor keep domestic animals which can supply them with food in the way of meat or milk.

The very mode of their subsistence makes them all wanderers. As soon as the edible plants in the vicinity of one waterhole grow scarce, the people move on to another, following the movements of the game and the growth of the plants. In this way a few months are spent at one waterhole, then some months at another, perhaps at even a third or fourth, and it is often a year or more before the first is revisited.

In particular their movements are regulated according to the season 221
and the distribution of the rainfall upon which they are mainly 312
dependent for their food supply. In the Namib Desert and in the 423
Central and Northern Kalahari each band has different dry and rainy season quarters, to which it resorts as the growth of veldkos or the movements of the game necessitate. The Namib Bushmen roam about the sand dunes of their region during the rainy season and well into the dry season, but as soon as the water and the indispensable */naras* fruits found there are exhausted, they draw back into the mountains, where each band has its permanent waterholes.[1] Similarly the Bushmen in the Central Kalahari roam in the sandy plains during the rainy season, and still manage to live there for part of the dry season, even after standing water has disappeared, on succulent melons and roots; but when these also begin to fail the people are

[1] Trenk, "Buschleute der Namib," 166, 168.

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221 compelled to turn back to permanent waterholes. Thus in the rainy
●312 season the Aikwe, Tsaukwe, /Amkwe, /Dukwe, and Tserekwe all hunt
423 in the wide sandveld pierced by the bed of the Letyahau, keeping to some extent to their respective hunting territories, but apparently also hunting together peacefully in the most central parts of the region. In the dry season, however, they turn back to the limestone pans of the Ghansiveld and Mahuraveld and to the river-courses of the Tauche-Botletle system, where permanent water is to be found.[1] The same alternation of residence with the seasons occurs, as we have seen, among the Tannekwe and the Hukwe, and may also be noted among the Kung and the Auen in the Omaheke and Kaukauveld.[2]

It is not only in alternation of residence that the change of season
[621] makes itself felt. In some cases it also affects the very cohesion of the band itself; for, as already mentioned, both among the Auen and among some of the Central Kalahari tribes the members of the band concentrate together during the rainy season when there is a more abundant supply of food, but as the dry season comes on the families scatter and wander off in different directions.

From their huts the people go out every day in search of food.
462 The women rise early, light the fire, and prepare the food for the
512 morning meal, which usually consists of veldkos left over from the previous evening. After having eaten, the men may go out hunting or visiting or engage in some other occupation, such as preparing skins, weapons, and utensils. The women accompany one another in search of veldkos and go out soon after the men have left. "One may see a group of women and little children start off in one direction, single file of course, then some men in another, then four or five boys together, then girls, small and big, then some more men, and so on." When food is obtainable at no great distance, the women are usually back in camp towards midday. When they have far to go they may not reach home till late in the afternoon. Wood is collected on their way back. Immediately after their return they start the fires and proceed to prepare the food, the younger married women and young girls in the meantime fetching water from the neighbouring waterhole.
[264] Food is ready by the time the men arrive in the late afternoon, and the evening meal, the principal meal of the day, is then eaten without delay. Meals are taken in common by the members of the family,
512 each family eating at its own hut. Afterwards visits are usually
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[1] Passarge, *Die Buschmänner der Kalahari*, 31–2.
[2] Seiner, "Bereisung der Omaheke," 303.

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222 622 [184] A somewhat different ceremony, also connected with the collection of veldkos, is held by the Kung.[1] Once a year, when the edible bulbs of the veld are beginning to ripen at the beginning of the rainy season, the head of the band on a morning fixed by him calls together all the inhabitants of the camp before sunrise. He then takes up some faggots mixed with dry grass and straw, and all squat down in a circle around him. On the ground near the firewood lies a piece of wood, in which is bored a hole. In this hole is placed a freshly-broken twig of the wild fig-tree. A lit pipe is handed to the headman. He takes it in both hands, held palm to palm, and twists it about over the wood until its burning content falls on to the grass, which becomes kindled into flames. During this performance he repeats the following prayer to [782] [539] Huwe, a supernatural being: "Father, I come to you, I pray to you, please give me food and all things, that I may live." When the fire has burned out the members of the band scatter to seek the new bulbs, which up till now they might not touch.

222 184 These two ceremonies are the only ones on record indicating the presence of a special cult among the Bushmen in connection with the gathering of veldkos; but, as will be shown later, in all the Bushman tribes there are numerous other ritual observances and beliefs which may be regarded as centring in the sources of food supply, although they are somewhat different in nature from the two just described.

312 [462] [857] [415] [237] Water must also be fetched every day from the waterhole. This is generally the task of the children, but if the distance is far the women go, and occasionally even the men. The water is stored in ostrich egg-shells in one end of which is bored a hole which can be plugged with grass. These are carried about in a net of woven fibre or in skin bags. The stomach of a buck is also sometimes used as a water-bottle.

312 182 [221] [621] The supply of water is one of the most acute problems facing the Bushmen in the Kalahari and Namib Deserts. It affects their mode of life to a very considerable extent, for it not only regulates the migrations of the people, but also their cohesion, since, as we have seen, in many cases the different families constituting a band live together only in the rainy season, to scatter apart as soon as the dry season returns. Moreover, upon the supply of water depends the growth both of the veldkos and also of the grass upon which the game lives, so that the whole subsistence of the Bushmen is intimately bound [823] up with it. This intimate dependence, as we shall subsequently see,

[1] Vedder, "Grammatik der !Kū-Buschmannsprache," 6–7.

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finds expression in the numerous observances and beliefs developed in relation to the sources of water, and especially to the rain. Here, however, we may note how the Bushmen cope in practice with this ever-present problem.

Caches of ostrich egg-shells containing water are often buried in the ground or hidden in a tree for future use, and to steal them is one of the greatest offences in Bushmen life. When even these have given out, a substitute is found in various succulent plants, especially the */naras* and the *tsama*, which contain enough moisture to relieve thirst and which are still available for the first part of the dry season. In some parts of the Kalahari water may still be found below the surface at this time, and to obtain it the people make use of an ingenious filter. A hole is dug in the sand where the green colour of the grass indicates the presence of the subterranean water, and with a reed tube to the lower end of which is attached a bundle of grass they painfully suck out drop by drop the water that has collected below, then carefully transfer it to the egg-shell bottles. But when even this resource fails them, they are compelled to make hurried marches back to the permanent waterholes, to which they cling until the coming of the rainy season again enables them to move out into the sand veld and resume their normal hunting life.[1]

Industries and Trade

Industries

Besides their food, which they must find from day to day, the Bushmen have need of little but their weapons and utensils. Their household possessions are few, for they seldom own more than they can conveniently carry about with them, and all their industries are essentially domestic.[2]

From wood they make their huts, the staves of their bows and spears, quivers for their arrows, digging-, throwing-, and firesticks, the long barbed stick used for catching spring hares and other burrowing animals, the poison sticks on which the arrow poison is gathered in lumps after it has been prepared, the spits (sometimes

[1] Livingstone, *Missionary Travels*, 51; Chapman, *Travels in S. Africa*, ii, 297; Passarge, *Buschmänner*, 51, 70–1, and fig.; Schultze, *Aus Namaland und Kalahari*, 671–3; Seiner, "Bereisung der Omaheke," 393–4.

[2] The most comprehensive account of Bushman industries is to be found in Gretschel, "Die Buschmannsammlung Hannemann," *Jb. städt. Mus. Vkde. Leipzig*, v (1911–12), 89–113, pl. xxiii–xxix, which relates chiefly to the Auen; cf. also van Rippen, "Notes on Some Bushman Implements"; Stow, *Native Races of S. Africa*, 62–80; Passarge, op. cit., 81–94; Gentz, "Beiträge zur Kenntnis der südwestafrikanischen Völkerschaften," 297–301; Kaufmann-op. cit., 152–3; Schultze, op. cit., 658 sqq.; Werner, "Ueber die Heikum- und Kungbuschi leute," 257; D. F. Bleek, *Naron*, 8–18 *passim*; Fourie, "Bushmen of S.W.A.," 103.